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ABSTRACT

Crowding theoretically causes increased situational stress which in turn intensifies the pressure upon an individual to conform to the leading stimulus. The specific question of whether listeners in a densely packed audience respond more favorably to a persuasive speech than listeners in a less crowded environment was investigated. One hundred and sixty-one volunteers from Northwestern University participated in the experiment. Randomly assigned to one of four treatment conditions of varying audience densities and a control group, participants were subject to a 15 minute, live speech advocating an anti-vivisection position. Following the speech, treatment subjects filled out the Molnar Vivisection attitude scale on which they had been pretested earlier and also responded to the Zuckerman-Lubin Multiple Affect Adjective Check List which measures situational anxiety. The results of the experiment supported the theory. Anxiety increased linearly with crowding and more immediate attitude change was evidenced under the more crowded conditions. (Author/LG)

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THE EFFECTS OF VARYING DEGREES OF AUDIENCE DENSITY UPON AUDITOR ATTITUDE

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Social psychologists, rhetoricians, and practitioners in the field of public address allege a relationship between audience density and suggestibility. Hollingsworth states: "It is easy to speak to a packed house, but it would take a Demosthenes to make an impression when separated from his audience by a yawning abyss of empty seats.[1] LaPiere claims that a closely packed audience is easier to convert to a new position than a scattered audience,[2] and Young suggests that it is more effective to crowd two hundred people into a room made to hold one hundred fifty than into a room which accommodates five hundred.[3] Brigance advises the speaker to "pack the audience together,"[4] and Minnick notes that this technique was one of the effective rhetorical strategies of Hitler and Mussolini.[5] Aides of the late Senator Robert Kennedy told local Northwestern University supporters that it is better to have a full room of one hundred people than the Hollywood Bowl with one hundred empty seats.[6] During the restoration of the House of Commons after World War II, Winston Churchill ruled that the building should be maintained intentionally small so that it would accommodate only two thirds of the Members of Parliament. He argued that it was better to crowd in more than the chamber could comfortably seat than to have the possibility of empty benches.[7]

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In spite of the extensive testimony suggesting that crowding facilitates attitude change, two previous studies concerned with audience density have failed to establish this relationship. Thomas and Ralph studied the effects of a live speech presentation before six different conditions of seating density and arrangement in a lecture hall which held approximately one hundred fixed seats.[8] In the most crowded condition Ss were assigned to all but 15 seats. Furbey presented a taped message to audiences of 40-50 Ss in an auditorium which contained 134 theater type seats.[9] In the scattered condition the Ss were spread throughout the hall, but in the compact condition they occupied every seat in the front of the room. Neither Thomas and Ralph nor Furbey found that crowding enhances persuasion. These negative findings may be due to the small range over which the researchers manipulated audience density. Neither experiment involved the close inter-auditor distance with which crowding is usually associated.

There is considerable theoretical justification for expecting that listeners in a densely packed audience respond more favorably to the leading stimulus than listeners in a less crowded condition. Milgram states that any comprehensive theory of audience response must systematically account for "the role played by the physical conditions created by dense agregates of people."[10] The influence of high audience density upon auditor response may involve a two step process: 1) Crowding occasions situational stress, 2) Increased situational stress increases the pressure to conform to the leading stimulus.

Edward Hall theorizes that increased physical crowding leads to increased anxiety.[11] Hutt and Vaizey found that the play of children became more aggressive as crowding increased.[12] Siegel and Haugen systematically enlarged the size of the audience in a given room for stutterers and determined that the larger the audience, the more the speaker stuttered.[13] Griffitt and Veitch discovered that the self reports of Ss in a high density condition on the Mood Adjective Check List were significantly more negative than those of Ss who were less crowded.[14] On the basis of a series of task experiments conducted under differing room density, Freedman, Klevansky and Ehrlich claim that density is not an aversive stimulus.[15] They did not, however, measure actual drive arousal, but merely assumed its absense on the basis of task performance. The bulk of the evidence supports the theory that crowding induces situational stress. Unlike the anxiety which is created in most dissonance and fear appeal research, this increased anxiety is not necessarily associated with the stimulus message.

William Sargant postulates that physiological stress makes the mind a "tabla rosa," incapable of critical defense.[16] Empirical studies which are concerned with the effects or irrelevant situational stress tend to confirm that such stress renders the individual more persuasible. Helmreich, Kuiken and Collins presented the same persuasive message to soldiers who were about to enter a tear gas chamber and to those who were relaxing in their barracks.[17] Soldiers under the high stress condition were more persuasible. Simonson and Lundy found that irrelevant fear increases an individual's acceptance of a persuasive message. In one study they presented the same message concerning

capital punishment to Ss who were about to take a midterm exam and to those who had no exam scheduled.[18] In another study the Ss in the treatment condition were told that they would receive a drug by hypodermic injection which would have unpleasant side effects.[19] While viewing this equipment they received arguments opposing cultural truisms. In both studies, Ss who experienced stress which was irrelevant to the message content changed their opinion more than Ss in the non-stress condition.

In an attempt to determine whether or not emotional arousal produces greater susceptibility to social influence, McNulty and Walters took measures of EMG muscular tension in high school boys.[20] EMG level correlated positively with conformity. Smith and Richards divided Ss into two groups according to their score on the Taylor Manifest Anxiety Scale. Those scoring high on this test conformed more to the group norm than those who were low in trait anxiety. These researchers conclude: "It appears that anything which heightens anxiety in the group pressure situation will increase the degree of conformity.[21]

The two step theory discussed above generated the following hypotheses:

H_1: Members of a high density audience will indicate more situational anxiety than members of a low density audience.

H_2: Members of a high density audience will conform more to the attitude represented by the leading stimulus than members of a low density audience.

Verbal indications of attitude change seem relatively meaningless unless they persist over time and are matched by appropriate behavior. These considerations led to the following hypotheses:

H_3: Different levels of conformity which are occasioned by varying conditions of audience density will persist over time.

H_4: Proportionally more members of a high density audience will make a public commitment favoring the position represented by the leading stimulus than members of a low density audience.

Method

161 male and female volunteers from Northwestern University were pretested three weeks before the experiment, and randomly assigned to one of four treatment conditions or a control condition. Ss in the treatment conditions heard a 15 minute speech delivered "live" by a speaker who advocated an anti-vivisection position. All presentations were recorded and were later played to an independent panel of speech teachers who were ignorent of the hypotheses and particular treatment conditions. Neither they nor a hidden observer were able to discern a difference in the quality of presentation.

The independent variable of density was manipulated by varying the number of auditors in the same 17' X 18' room which contained 30 wooden chairs. Table 1 shows the number of Ss in the room and the density for each condition. In the least crowded condition only half of the seats were filled. In the most crowded condition all of the seats were filled and some Ss stood around the walls and sat on the floor.

TABLE 1

ROOM DENSITY IN EACH CONDITION

Condition	Total Room Area	People in Room*	Mean Area per Person
C (Control)	306 sq. ft.	18	17.0 sq. ft.
X_1 (Scattered)	306 sq. ft.	17	18.0 sq. ft.
X_2 (Full)	306 sq. ft.	31	9.9 sq. ft.
X_3 (Packed)	306 sq. ft.	46	6.7 sq. ft.
X_4 (Jammed)	306 sq. ft.	59	5.2 sq. ft.

Following the speech, Ss in the treatment condition filled out the Molnar Vivisection attitude scale[22] on which they had been pretested three weeks earlier. They also responded to the Zuckerman--Lubin Multiple Affect Adjective Check List which measures situational anxiety.[23] Ss in the control condition responded to the same forms but did not hear the speech. After they left the room, all Ss were given an opportunity to sign an anti-vivisection petition. Three weeks after the experiment Ss filled out the attitude scale for a final time.

Results

The results of the four dependent measures are depicted in Table 2. The correlation coeficient for the relationship between mean area per person and situational anxiety was -.872, df=3, signfiicant at the .05 level. Hypothesis 1 was confirmed.

Hypothesis 2 was tested by an analysis of covariance with the opinion post-test as the criterion variable and the pretest as the concomitant variable. The adjusted post-test means calculated in the analysis of covariance are shown in Table 2. A high score

TABLE 2

RESULTS OF DEPENDENT MEASURES

Condition	H_1 Anxiety	H_2 Adjusted Post-Test Means	H_3 3 Wk. Delayed Post-Test Means	H_4 Percent of Ss Signing Petition
C (Control)	8.50	43.29	45.49	50.0%
X_1 (Scattered)	8.80	48.50	48.90	92.3%
X_2 (Full)	9.48	52.83	50.71	92.0%
X_3 (Packed)	10.39	52.30	51.33	92.5%
X_4 (Jammed)	11.25	53.13	50.16	96.1%

indicates an anti-vivisection position. The computed $F_{4,128}$ ratio is 7.95, significant beyond the .001 level of probability.

A one tailed t test was used to determine the significant differences between the adjusted post-test means. All of the means in the treatment conditions are significantly higher (.001) than that of the control condition. This is to be expected if the speech was in fact persuasive. The meaningful comparison is between the adjusted post-test meean in X_1 and the adjusted post-test means of X_2, X_3, and X_4. Ss in the full, packed and jammed audiences showed significantly greater (.05) agreement with the speaker than Ss in the scattered audiences. Hypothesis 2 was confirmed.

The time lapse opinion data in Table 2 reveal a deterioration of the absolute attitude change of Ss in the three most crowded conditions. While mean attitude in the full, packed and jammed audiences is still more anti-vivisectionist than that of the scattered audience, the difference does not approach significance. ($F_{4,128} < 1$) Hypothesis 3 was not confirmed.

The petition signing results show that a greater proportion of Ss who heard the persuasive speech made a public commitment than Ss who did not hear the speech (X^2_1=21.83). Although the proportion of signers in the most crowded audience is greater than that obtained in other conditions, the difference falls far short of significance. Hypothesis 4 was not confirmed.

Discussion

This research was based on the theory that crowding causes increased situational stress which in turn intensifies the pressure upon an individual to conform to the leading stimulus. The results of the experiment support that theory. Anxiety increased with each increment of audience density. There was a positive correlation of .769 between the mean anxiety score for each condition and the mean adjusted post-test opinion score. Although this does not establish causality, it gives credence to the assumption that densely situated auditors experienced a situational anxiety which made them more conformant than scattered auditors.

It is not readily apparent why the significant difference in adjusted post-test opinion scores was between the scattered condition and the other three more crowded audiences. Anxiety scores increased in approximately equal intervals as room population intensified, and it is a reasonable expectation that opinion change would do likewise. Table 1 reveals, however, that although density was altered by increasing population in multiples of approximately 15 Ss, the resultant increase in density as measured in square feet per person

was not linear. Audience density in X_2 was almost double that of X_1, but it was only 28% greater in X_4 than in X_3.

The linear correlation between the mean sq. ft. per person in the treatment conditions and the mean adjusted post-test opinion scores of the auditors is -.937, df=2, significant at the .05 level. This supports the assumption that the largest jump in opinion change occurred between the scattered and full conditions because the shift in relative density was greatest in these adjacent conditions.

The partial decay of initial attitude change over time is not unusual in a "one shot" persuasive appeal experiment. This finding does lead to the speculation that multiple exposures to a persuasive message under crowded conditions might produce a more viril change of attitude than occurred in this experiment.

Hypothesis 4 was based on the assumption that any effect of density on an individual's expressed attitude would be paralleled in relevant public behavior. Campbell suggests that the traditionally low correspondence between these two measures lies in their different cost thresholds.[24] It is usually psychologically less costly for an individual to indicate an opinion on an anonymous paper and pencil test than to make a public commitment. Petition signing was chosen as the measure of behavioral commitment because of its relatively low cost to the S.

The results of the petition signing measure show that the cost threshold was extremely low. 50% of the control Ss who never heard the speech signed the form. 93.8% of those who heard the speech signed. With a nearly universal positive response to the petition,

it is impossible to gauge the difference in behavior between treatment conditions. Thus the failure to confirm Hypothesis 4 cannot necessarily be interpreted as a rejection of the principle that audience density affects subsequent behavior.

Summary

An experiment was conducted to test the two step theory that high audience density increases situational anxiety which in turn occasions greater attitude change in the direction advocated by the speaker. Ss heard a persuasive speech as members of a scattered, full, packed or jammed audience. Measures of situational anxiety and immediate post-test attitude supported the theory. State anxiety increased lineally with crowding. Auditors in full, packed and jammed conditions evidenced more immediate attitude change than those in a scattered condition. Most of this difference had disappeared after three weeks. The degree of crowding did not produce any observable difference in public commitment to the position advocated by the speaker.

FOOTNOTES

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